AMENDMENTS TO THE CLAIMS

1 (Currently amended). A system for circulating blood in a patient comprising:

a cannula assembly comprising an outer cannula ~~enclosing first and second flow paths, the cannula adapted in length and~~ sized and configured to extend through an incision into the vena cava or the right atrium and adapted to provide blood intake at a first location in the vena cava or the right atrium and an inner cannula sized and configured to be slidably received within the outer cannula, the inner and outer cannulas forming between them a lumen defining a second flow path, the inner cannula sized and configured to extend beyond the outer cannula to ~~and~~ provide blood output at a second location in the pulmonary artery; and

a pump communicating with the first and second flow paths and operating to intake blood through the first flow path at the first location and to output blood through the second flow path at the second location, thereby bypassing blood inflow from the right ventricle and the left ventricle;

wherein the pump and cannula assembly, including the first flow path and the second flow path, having a combined priming volume external of the heart, ~~and~~ vena cava, and pulmonary artery of not greater than about 1000 ml.

2 (Previoiusly amended). A system according to claim 1 or 47 wherein the priming volume is not greater than about 30 ml.

3 (Previously amended). A system according to claim 1 or 47 wherein the priming volume is not greater than about 10 ml.

4 (Currently amended). A system according to claim 1 wherein the length of the inner cannula is adapted to extend through the tricuspid valve, through the pulmonary valve, and into the pulmonary artery.

5 (Currently amended). A system according to claim 47 wherein the length of the inner cannula is adapted to extend through the bicuspid valve, through the aortic valve, and into the aorta.

6 (Canceled).

7 (Previously amended). A system according to claim 1 or 47 wherein the first and second flow paths are linear and adapted for insertion at a first end into a heart chamber or blood vessel and at a second end into a blood vessel.

8 (Original). A system according to claim 6 wherein the pump comprises a reverse flow pump.

9 (Original). A system according to claim 7 wherein the pump comprises a reverse flow pump.

10 (Currently amended). A system according to claim 7 wherein the pump is coupled to the first and second flow paths of the cannula assembly external of the heart.

11 (Currently amended). A system according to claim 1 wherein the ~~length of the cannula is adapted to extend through an incision in the vena cava or the right atrium and into the pulmonary artery, and the~~ pump is adapted to convey blood from the vena cava or right atrium through the cannula assembly into the pulmonary artery.

12 (Currently amended). A system according to claim 47 wherein the ~~length of the cannula is adapted to extend through an incision in the pulmonary vein and into the aorta, and the~~ pump is adapted to convey blood from the pulmonary vein through the cannula assembly into the aorta.

13 (Currently amended). A system according to claim 1 further comprising:

a second cannula assembly adapted to extend through an incision in the pulmonary vein or the left atrium and into the aorta, and a second pump adapted to convey blood from the pulmonary vein or left atrium through the second cannula assembly into the aorta.

14 (Previously amended). A system according to claim 1 or 47 further comprising a controller coupled to the pump for controlling the pump speed.

15 (Original). A system according to claim 13 further comprising a controller for the first pump and the second pump for controlling the speed of each pump separately.

16 (Original). A system according to claim 14 wherein the controller is adapted to control the pump in response to blood pressure, blood oxygen level, blood carbon dioxide level or blood flow volume.

17 (Original). A system according to claim 15 wherein a controller is adapted to control the first pump in response to pulmonic pressure and a controller is adapted to control the second pump in response to aortic pressure.

18 (Amended). A system according to claim 1 or 47 further comprising a cradle adapted for supporting the heart while displaced from its normal position and while the surgery is performed thereon.

19-36 (Canceled).

37-46 (Canceled).

47 (Previously added). A system for circulating blood in a patient comprising:

a cannula assembly comprising an outer cannula ~~enclosing first and second flow paths, the cannula adapted in length and~~ sized and configured to extend through an incision into the pulmonary vein or the left atrium ~~of the patient's heart~~ and adapted to provide blood intake at a first location in the pulmonary vein or the left atrium and an inner cannula sized and configured to be slidably received within the outer cannula, the inner and outer cannulas forming between them a lumen defining a second flow path, the inner cannula sized and configured to extend beyond the outer cannula to ~~and~~ provide blood output at a second location in the aorta; and

a pump communicating with the first and second flow paths and operating to intake blood through the first flow path at the first location and to output blood through the second flow path at the second location, thereby bypassing blood inflow from the right ventricle and the left ventricle;

wherein the pump and cannula assembly, including the first flow path and the second flow path, having a combined priming volume external of the heart, pulmonary vein, and aorta of not greater than about 1000 ml.

48-49 (Canceled).